


Notice of Allowability	Application No.	Applicant(s)	
	09/682,699	BRITTAIN, JEAN HELEN	
	Examiner	Art Unit	
	Tiffany A Fetzner	2859	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 05/18/2004 & the telephonic interview of 05/26/2004.
2. ☒ The allowed claim(s) is/are 1-12 and 16-30.
3. ☒ The drawings filed on 05 October 2001 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date <u>05/26/2004</u> . |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

Examiner's Amendment

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.
2. Authorization for this examiner's amendment was given in a telephone interview with **Attorney J. Mark Wilkinson Reg. No. 48,865** on May 26th 2004.
3. The application has been amended as follows:

In the **After-Final Amendment of May 18th 2004**, which has been marked **Okay to Enter** by the examiner:

A) Replace After-final (previously presented) claim 1 with the following Examiner amended claim 1:

Claim 1 ---A method of imaging large volumes without resulting slab-boundary artifacts comprising:

defining a desired FOV larger than an optimal imaging volume of an MR scanner;
enabling readout in a first direction;

selecting a slab thickness in **the** first direction that is smaller than the desired FOV and within the optimal imaging volume of the MR scanner; and

continuously moving one of the optimal imaging volume and an imaging object in the first direction while repeatedly exciting and encoding spins with readout in the first direction to acquire data that is restricted to the selected slab thickness until at least one image of the FOV can be reconstructed ---

B) Replace After-final (Currently amended) claim 22 with the following Examiner amended claim 22:

Claim 22 --- "A computer program to control a medical image scanner and create images across scanning boundaries without boundary artifacts, the computer program having a set of instructions to control a computer to:

select an FOV spanning an area greater than a predefined optimal imaging area of the medical image scanner;

define readout in a first direction;

apply an RF pulse to excite a region in at least **the** first direction in the selected FOV;

apply magnetic field gradients to at least frequency encode the region in the first direction;

acquire k-space data in the first direction for a subset of at least one additional direction;

continuously reposition the predefined optimal imaging area with respect to an imaging object without interruption of motion **in the first direction**;

track continuous movement of the predefined optimal imaging area with respect to an imaging object; and

repeat the image data acquisition during continuous movement of the predefined optimal imaging area with respect to an imaging object in the first direction until complete image data are acquired across the entire FOV to reconstruct an image of the FOV---

Examiner's Comment

Drawings

4. The examiner has approved the submitted October 5th 2001 drawings, however the Official Draftsperson has objected to them.

5. Applicant must submit new formal drawings in accordance with the attached PTO 948 Official Draftsperson's Review form of May 26th 2004.

6. New corrected drawings are required in this application because the page numbering at the bottom of the pages of the FORMAL DRAWINGS is improper. [See the attached PTO 948 form].

7. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid **abandonment** of the application. The requirement for corrected drawings will not be held in abeyance.

Canceled Claims

8. **Claims 13 –15** are canceled as per applicant's December 15th 2003 amendment response.

Provisional Double Patenting Withdrawn

9. The **provisional double patenting rejections of Claims 1,5, 6, 7, 8, 10, 12, 16-18, 20, 22, 24-26 and 29** of this application with **claims 1, 10-14, 16-18, 21, 24, 30, 39** of copending Application No. 10/235,454 are **withdrawn**.

Response to Arguments

10. The applicant's After-final arguments concerning the **Hajnal** reference of May 18th 2004 have been considered, and in view of the **examiner's amendment to after final claim 22**, which clarifies that the frequency encoding in the first direction, also corresponds to the continuous repositioning of the predefined optimal imaging area with respect to an imaging object without interruption of motion **in the first direction**; applicant's May 18th 2004 after-final arguments on page 9 paragraph 4 through page 10 paragraph 2 concerning the distinct differences between applicant's invention and the **Hajnal** reference to be persuasive. Therefore the rejections concerning the **Hajnal** reference from the March 19th 2004 final office action are **withdrawn**.

11. The **112 rejection of claim 30**, from the March 19th 2004 final office action is withdrawn in view of applicant's May 18th 2004 after-final amendment which amends the claim to correct the issue of concern without adding new matter.

The following is an examiner's Statement of **Reasons for Allowance**

12. **Examiner Amended Claim 1**, is considered to be allowable over the **prior art of record** because the prior art of record does not teach or suggest the feature of

“continuously moving one of the optimal imaging volume and an imaging object in the first direction while repeatedly exciting and encoding spins with readout in the first direction to acquire data that is restricted to the selected slab thickness until at least one image of the FOV can be reconstructed”, in combination with each of the other features of this claim.

13. **After-final Claims 2-12** are considered to be allowable over the prior art of record because they each depend from **allowable Examiner amended claim 1**. Therefore, the same reasons for allowance that apply to **allowable Examiner amended claim 1** apply to **dependent claims 2-12** and need not be reiterated.

14. **After-final Amended Claim 16**, is considered to be allowable over the prior art of record because the prior art does not teach or suggest the feature of acquiring “full MR data with frequency encoding in a direction of table motion, defined as z-direction, for a selected subset of the MR data acquired in at least one transverse dimension in the fixed slab;”, in combination with each of the other features of the claim.

15. **After-final Claims 17-21** are considered to be allowable over the prior art of record because they each depend from **allowable Amended claim 16**. Therefore, the same reasons for allowance that apply to **allowable Amended claim 16** apply to **dependent claims 17-21** and need not be reiterated.

16. **After-final Claims 23-30** are considered to be allowable over the prior art of record because they each depend from **allowable Examiner amended claim 22**. Therefore, the same reasons for allowance that apply to **allowable Examiner amended claim 22** apply to **After-final dependent claims 25-30** and need not be reiterated.

17. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

18. The **prior art made of record** and not relied upon is considered pertinent to applicant's disclosure.

A) **Wang** US patent 5,928,148 issued July 27th 1999.

Art Unit: 2859

B) Yoshitome Japanese Laid-open Patent Application (kokai) No. H6-304153

disclosed November 1st 1994. [The examiner is using the English version of this reference provided by applicant and submitted with applicant's Information Disclosure Statement].

C) Yoshitome Japanese Laid-open Patent Application (kokai) No. H6-311977

disclosed November 8th 1994. [The examiner is using the English version of this reference provided by applicant and submitted with applicant's Information Disclosure Statement].

D) Machida US Patent Application Publication US 2002/0115929 A1 published

August 22nd 2002 which has an effective filing date available under 35 U.S.C. 102(e)

of September 21st 2001 is not available as prior art against the instant application

because applicant's sworn declaration under 37 CFR 1.131 filed April 18th 2003

effectively disqualifies the **Machida** reference as prior art, because applicant has sworn

behind the September 21st 2001 date of the article, therefore the **Machida** reference is

not prior art against the claims of the instant application.

E) Hajnal US patent 6,385,478 B1 issued May 7th 2002, filed December 21st 1999.

F) The Dietrich et al., article "Extending the coverage of true volume scans by continuous movement of the subject" by Olaf Dietrich and Joseph V. Hajnal from The Robert Steiner Magnetic Resonance Unit, Hammersmith Hospital, Du Cane Road, London W120HS 1999.

G) Brittain US Patent Application Publication US 2002/0140423 A1 published

October 3rd 2002, which is the corresponding publication of applicant's instant

application, therefore this application is not available as prior art, but is noted only for the purposes of a complete record.

H) Kruger et al., US patent application Publication 2002/0173715 A1 published

November 21st 2002; filed November 26th 2001, with an effective US prior art date of

April 9th 2001 from the US provisional application 60/282,555 filed April 9th 2001. This

reference has been overcome by the sworn declaration of December 15th 2003 made by

applicant, who has effectively sworn behind the April 9th 2001 date of the **Kruger et al.**, reference.

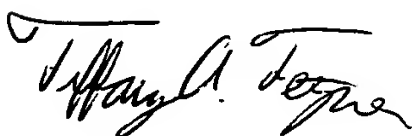
I) **Brittain** US Patent Application Publication 2003/0011369 A1 published January 16th 2003, which is the corresponding publication of applicant's co-pending continuation application, 10.235,454 and therefore is not available as prior art, but is noted only for the purposes of a complete record.

J) **Kuhara** US patent application Publication 2002/0021128 A1 published February 21st 2002; filed April 25th 2001, This reference is not available as prior art because the filing date of this reference is after the April 9th 2001 date which applicant swore behind in regards to the **Kruger et al.**, reference, (i.e. reference letter H above). Additionally this reference fails to teach MRI imaging with frequency/readout encoding in a first direction, and continuous patient table motion in the first direction without stopping.

Conclusion

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tiffany Fetzner whose telephone number is: (571) 272-2241. The examiner can normally be reached on Monday-Thursday from 7:00am to 4:30pm., and on alternate Friday's from 7:00am to 3:30pm.

20. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez, can be reached at (571) 272-2245. The **only official fax phone number** for the organization where this application or proceeding is assigned is **(703) 872-9306**.



TAF

May 27, 2004



Diego Gutierrez
Supervisory Patent Examiner
Technology Center 2800